

TAXONOMIC STUDIES IN GENUS *ORYZA* L. II. SOME NOMENCLATURAL CONFUSIONS

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ABSTRACT

Wild rices of Asia have been variously referred to by different workers as *Oryza perennis*, *O. fatua*, *O. rufipogon*, *O. sativa* var. *fatua*, *O. sativa* L. f. *spontanea*, *O. balunga*, *O. formosana* etc. Validity of each of these names and their application to the taxa are discussed and it is concluded that (i) the name *O. perennis* is to be discarded, (ii) valid name for perennial wild rice of Asia is *O. rufipogon* and (iii) annual wild rice of Asia lacks a valid name.

Oryza sativa L. and its close relatives represent a morphological complex which has been termed as *O. sativa* complex by Tateoka (1963). The nomenclature of the various taxa of this group is riddled with confusion. The main reason for such a situation is the absence of clear-cut taxonomic delimitations. The occurrence of natural hybridization within this complex results in morphological intergrades and thus blurs the distinction among the biological taxa. Lack of detailed descriptions, illustrations and typifications of the combinations used within this complex have caused further confusion in nomenclature. The names frequently used in this connection are *O. perennis* Moench, *O. fatua* Koen., *O. rufipogon* Griff., *O. sativa* L. var. *fatua* Prain and *O. sativa* L. f. *spontanea* Rosch. Each of this name has been employed and understood in different senses by different workers. This has resulted in unnecessary debates and further confusions.

The present authors considered that a detailed study of this group is desirable to ascertain the taxonomic delimitations before attempting to solve the nomenclatural scramble. According to our findings (Sharma and Shastri, in press), *O. sativa* L. and its closely related wild types in Asia could be organised into three distinct species viz. (i) a perennial wild species (*balunga* type), (ii) an annual wild species (*nivara* type) and (iii) the cultivated species (*sativa* type). We emphasize that the attributes (perennial/annual, wild/cultivated) by no means represent the 'key' characters or sole differences among these species. Actually these three species represent an association of distinctive characters and the above attributes have been used only for the sake of brevity in expression especially in absence of an unambiguous nomenclature. The usage of the epithets *balunga*, *nivara* are purely provisional and does not commit any status for them.

The perennial species has been generally referred to as *O. perennis* Moench (Chatterjee, 1948; Sampath and Rao, 1951; Kihara, 1959; Richharia, 1960; Morinaga and Kuriyama, 1960; Morishima and Oka, 1960; Yeh and Henderson, 1961, etc.). It has been described and illustrated by Sampath and Govindaswami (1958) as *O. perennis* var.

balunga. Yeh and Henderson (1961) referred to it as *O. balunga*. Bor (1960) and Tateoka (1963) identified this material as *O. rufipogon* Griff. which, according to them, also includes the annual wild species. In the present discussion, this species shall be referred to as 'perennial species' or as 'balunga' type only.

The annual wild species has been called as *O. fatua* Koen. (Porteres, 1956) or as *O. rufipogon* Griff. (Senaratna, 1956 and Sampath, 1963, 1964). Some authors prefer to call it as *O. sativa* L. var. *fatua* Prain (Chatterjee, 1948) or as *O. sativa* L. f. *spontanea* Roschev. (Kihara, 1959 and Morishima and Oka, 1960). In the present paper, this species shall be referred to as *nivara* type or as 'annual wild species' only. The present authors (Sharma and Shastri, in press) have emphasized the distinction between *nivara* types and *field spontanea* types. The latter types occur in the cultivated fields and greatly resemble the cultivated rices but for the shedding of spikelets. These cross freely with cultivated rices and form fertile hybrids. The distinction between these two types of annual rices has not been emphasized by many of the earlier workers (Chatterjee, 1948; Senaratna, 1956; Sampath, 1963, 1964).

The present paper shall discuss the various usages of the nomenclatural combinations proposed for the plants of this complex and ascertain their correctness in accordance with the recent International Code of Botanical Nomenclature.

O. perennis Moench

This name was given by Moench (1794) to plants that were growing in the Botanical Garden at Marburg. The description provided by him does not help identification of this species with any single species of *Oryza* now known to us. He mentioned that his *O. perennis* resembles in figure with that of Tab. 296 of Tournafort's (1719) *Institutiones* except for the awns. This figure as reproduced by Porteres (1956, p. 351) has broadly oblong spikelets. It should be remarked that the *balunga* rices that have been called *O. perennis* Moench by many recent workers (Chatterjee, 1948, Richharia, 1960; Sampath, 1963) do not possess this character. Moench (1794) did not mention the original source

of this species. However, it is believed that this species represented an American collection (Balansa, 1878; Chevalier, 1932; Roschevitz, 1937; Henderson, 1963). According to the Curator of the Botanical Garden at Marburg, the type specimen of *O. perennis* Moench is missing since a long time (see Tateoka, 1963). It is suspected that the type sheet of *O. perennis* Moench is lost for ever (C. E. Hubbard, *pers. comm.*).

In 1878, Balansa published an emended description of *O. perennis* Moench. It is evident from his vivid description that he refers to what is now known as *O. alta* Swallen. Parodi (1933) followed Balansa's description and used it for *O. latifolia* i.e. a close relative of *O. alta*.

It was Prodoehl (1922) who identified *O. perennis* Moench as a species of *O. sativa* complex. Roschevitz (1931) considered that the Asiatic and American wild rices of this complex represent a single taxon which he named as *O. sativa* L. f. *spontanea* Roschev.; *O. perennis* Moench was listed by him as a synonym of this taxon. Chevalier (1932) split this taxon into two distinct species, one American and the other Asiatic, and called the American species *O. perennis* Moench. It is surprising that in justification for his identification he quoted Balansa who understood by it a species outside the *O. sativa* complex. *O. perennis* Moench as understood by Chevalier (1932) has been typified by Cuban collections of Ekman that are also the type sheets for *O. cubensis* Ekman *nom. in Herb.* Hitchcock (1936) and Roschevitz (1937) accepted Chevalier's (1932) views on the typification of *O. perennis* Moench. According to Chevalier (1932), the African wild rice, *O. barthii* A. Cheval. should be a subspecies of *O. perennis* only. Thus the distribution of *O. perennis* was extended by him to Africa as well.

The Asiatic wild rices of *O. sativa* complex were split into two species—one perennial and the other annual—by Chatterjee (1948). The spikelet characters of this Asiatic perennial species come very close to those of the American and African material identified by Chevalier as *O. perennis* Moench. This led Chatterjee (1948) to identify these Asiatic perennial rices (*balunga* types) with *O. perennis* Moench as understood by Chevalier (1932). However, he mentioned its distribution in Ceylon only. Subsequently this material was identified throughout Southeast Asia and referred to *O. perennis* Moench (see Sampath and Rao, 1951; Kihara, 1959; Morinaga and Kuriyama, 1960; Richharia, 1960; Morishima and Oka, 1960; Yeh and Henderson, 1961; Li *et al.* 1962).

The present usage of the name *O. perennis* can thus be traced back to Prodoehl (1922), Roschevitz (1931), Chevalier (1932) and Chatterjee (1948). In this sense it refers to the perennial wild rices of *O. sativa* complex distributed in America, Africa

and Asia. The Cuban plants (Ekman 17915, Wright 3838) were named by Chevalier (1932) the type of this species as understood by him. The American material has also been referred to *O. cubensis* Ekman by some cytogeneticists (Goth and Okura, 1933; Morinaga, 1963). Similarly, the Asiatic plants have been called *O. balunga* by Yeh and Henderson (1961). However, none of these epithets are validly published in any rank. The name of the African material, *O. barthii* A. Cheval. is, however, valid. The merger of all these American, Asiatic and African rices into a single species led to the organisation of this species into three subspecies or varieties viz. *cubensis*, *balunga* and *barthii* (see Richharia, 1960; Henderson, 1963; Chang, 1964) respectively.

The usage of the name *O. perennis* Moench for the Asiatic plants of *O. sativa* complex has been associated with the recognition of two separate taxa for the perennial and annual wild rices (see Chatterjee, 1948; Sampath and Rao, 1951; Porteres, 1956; Senaratna, 1956). However, none of these authors typified these taxa as understood by them. Consequently, the name, *O. perennis* Moench, has been used for various types of wild rices of *O. sativa* complex in Asia as is evident from the labelled material received by us from the various sources. Moreover, some of the authors (Goth and Okura, 1933; Morinaga, 1963) have used the name *O. perennis* Moench for Asiatic material only, excluding the American material that would represent the neotype. This violates Art. 53 of the International Code of Botanical Nomenclature (1961).

Tateoka (1963) undertook a detailed study of the taxonomy and nomenclature of the genus *Oryza* and pointed out that the present identification of *O. perennis* Moench is inconsistent with Moench's protologue. He also pointed out that this name has been a source of confusion and it does not seem possible to ascertain the correct type for this combination. Therefore, he invoked Art. 69 of the Code and rejected this name.

To meet the nomenclatural objections raised by Tateoka (1963) and validate the name *O. perennis* Moench as used in the present sense, Sampath (1964) published a fresh description for this combination in Latin and typified it with an Asiatic perennial plant of *O. sativa* complex. We are unable to support the views of Sampath for the reasons that:

(i) *O. perennis* Moench has always been considered to represent an American species (Balansa, 1878; Prodoehl, 1922; Roschevitz, 1931; Chevalier, 1932; Parodi, 1935; Hitchcock, 1936; Roschevitz, 1937; Henderson, 1963). Sampath (1964) put forth no argument to refute this view. However, he re-typified this species with an Asiatic plant and offered no evidence in his support.

(ii) The neotypes for *O. perennis* Moench are already designated by Chevalier (1932). They are the Cuban collections of Ekman (17915) and Wright (3838). Sampath (1964) offers no objection to this typification nor does he mean to exclude this material from *O. perennis* Moench of his own description. In this sense, his typification becomes superfluous. But it is feared that this will create confusion because the two materials (Ekman 17195 and Sampath 12) are not considered conspecific according to some authors (see Chevalier, 1932; Röschevitz, 1937).

(iii) Sampath's (1964) description of *O. perennis* Moench does not conform with the protologue. According to the figure referred to by Moench (1794) this species should have broad oblong spikelets not met with in Sampath's type. Therefore, it can be safely concluded that Sampath's type does not represent the Moenchian species. This means Sampath's description and typification create further confusion regarding *O. perennis* Moench in so far as they describe one more material under this combination that does not agree with the protologue. This all the more supports Tateoka's (1963) contention that *O. perennis* Moench should be considered a *nom. conf.* under Art. 69 of International Code of Botanical Nomenclature (1961).

O. rufipogon Griff.

This species was observed (and collected) by Griffith on October 1, 1835, in Hubbegunge and Nubbegunge (now spelt as Habiganj and Nabiganj) situated in East Pakistan. According to Griffith, it occurs in the margins of *jheels* and its habitat is similar to that of *Chrysopogon gryllus* (L.) Trin. The morphological description of *O. rufipogon* provided by Griffith is inadequate in so far as it does not help precisely to attach this name to any particular taxon now known.

Original description of *O. rufipogon* is as follows:

"Erect. perelegans, in aquosis per se? proveniens. Panícula effusa tenui, ramis patentibus, apiculis palearum rubrosanguineis, arista exsteriore longissime paleam $4\frac{1}{2}$ times superans, scabra pulchra rufescens, siccatione albescens. Habitus *Holci Grylli* stigmata atro-sanguinea pulcherrima.

In aquis (*Jheels* dictis) prope Hubbegunge et Nubbegunge. Eastern part of Bengal. Oct. 1835.

A beautiful variety of rice "toto caelo" in aspect different from the common species *O. sativa*."

The erect nature of the plant mentioned by Griffith would go in favour of its being *O. sativa* or *O. nivara*. It might mean *O. balunga* if he took into consideration only the portion that remains above the surface of water. Other characters mentioned by Griffith for *O. rufipogon* are not distinctive. Fig. 147 (Pl. xxxix) of Griffith (1851) is either not helpful in identifying it with a particular

taxon. The anthers are figured long as in *O. balunga* but the awns are somewhat robust as in *O. nivara*. Other features of the figure are common to all the species recognised within the *sativa* complex of Asia.

There is no specimen which is mentioned as holotype for *O. rufipogon* by Griffith nor there appears to be any specimen that can be now labelled as lectotype. If any such specimen is ever to be found, it would be expected either in Indian or British Herbaria. Indian herbaria were screened for any specimen of *O. sativa* complex known to have been collected by Griffith and/or labelled by him as *O. rufipogon* with no avail. It appears that no specimen collected by Griffith from its type locality or labelled as *O. rufipogon* was available to other workers even in the past. It was not available in India to Watt as far back as 1890, nor was it available to Hooker at Kew around 1897. In recent years, Chatterjee (1947) could not find any specimen at Kew that could be called the type for *O. rufipogon* Griff. Hubbard (*Pers. comm.*) confirms its non-availability at Kew.

Under the above circumstances, it would be desirable to rely more upon its type locality and its habitat as mentioned by Griffith. To get an idea of the habitat of its type locality, it would be worthwhile to refer to the diary of Griffith's (1847) tour to that locality.

William Griffith was first appointed in India in 1835 and was attached to the Bengal Presidency. In the same year he was selected to form the deputation, consisting of Dr. Wallich and himself as botanists, to visit and inspect tea forests of Assam. It is during this journey that Griffith came across *Oryza rufipogon* near Habiganj on October 1, 1835. On 9th September 1835, the deputation was already at Pabna and left it on 10th. The party passed through Sirajganj, Jamalpur and Mymensingh, and on 27th September it entered the mouth of River Surma. His diary from 30th September 1835 up to 5th October 1835 reads as follows:

"30th. Some time after we entered the Soor-mah we apparently left its channel and upto this morning we have passed through a tract of *jheels* with a few clear and very deep channels. The villages are built on small eminences and are entirely surrounded with water. We have since entering these *jheels* passed through immense beds of vegetation formed principally of *Oplismenus* (*Panicum*) *stagninus*, *Leersia*? *aristata* which by the by is a distinct genus, *Villarsia cristata*, *Nymphaealotus*, *Azolla salyini*, etc. etc. The only novel things we have met with are *Ischaemum cuspidatum* Roxb. (sui generis) and a small grass intermediate between *Panicum* and *Chaemaeraphis*. The wild form of *Aryza sativa* (*), *Panicum interruptum* and *Leersia*? *ciliaris* Roxb. also occur, the two former in

abundance. On the more dry tracts, that occasionally though rarely occur, *Andropogon muricatus* appears.

"Oct. 1st. We have continued to pass through immense jheels. At about 6 AM we arrived at Hubbegunge, a large native town situated on the Barak which does not deserve the name of a river. The ground to the Eastward is losing the "jheel" character and appears densely wooded and to the S.E. rather high hills are visible. Altogether this land of jheels is very remarkable particularly on account of the great depth of water which except in one point has hitherto always exceeded 6 feet and yet the water has fallen in all probability two to three more. As the headquarters of tropical aquatic plants, it is well worthy of attention; the profusion of *Leersia aristata* Roxb. is immense but this is almost exceeded by *Oplismenus stagninus*.

"On 3rd October, we have left the tract of jheels and proceeded by small rivers overhung with jungles and fine bamboos; on the 5th we reentered the Soormah and proceeded down it to Chatic,— (*) 'Wild form of *Aryza sativa*' = *O. rufipogon* Griff.?"

The above tour report of Griffith gives an excellent description of the habitat *O. rufipogon*. It is evident that *O. rufipogon* Griff. grows in lakes where the depth of water, as Griffith says, is generally 5-6 feet.

The habitat and distribution of *balunga* and *nivara* types, and of *O. sativa*, as well of their natural hybrids studied by us would indicate that such a habitat would be occupied by either a deep water form of *O. sativa*, a *balunga* type or their natural hybrids. *O. sativa* has to be excluded from the present consideration as Griffith has separately considered it and mentions *O. rufipogon* as a wild and self sown species. Plants of *nivara* type would fail to compete in such a locality with other plants mentioned by Griffith. Further, our field survey data clearly indicate *nivara* types to be upland populations distributed in Western and Central India and that they do not extend east of West Bengal. Even in regions where they occur, they fail to grow beyond one metre depth of water. It is, therefore, suspected that *O. rufipogon* Griff. stands either for *balunga* type or its hybrid with *O. sativa* especially if backcrossed to the former.

To confirm this notion as well as to ascertain what *O. rufipogon* Griff. stands for, it was realised that plants similar to *O. rufipogon* Griff. should be collected from the type locality. As the climate and ecology of those localities are not so drastically altered in the course of these years, it was felt that the wild rices occurring now in this locality would not be much different from what were observed by Griffith between September 30-October 5, 1835. With the kind efforts of Rev. Dr. H. Santapau,

dried specimens of wild rice plants occurring in this locality were collected by Father A. W. Tim in October 1963. It is evident from these exsiccatae that the wild forms of *O. sativa* complex occurring in the type locality at present are identifiable as *balunga* like plants with some introgression of *sativa* characters. This observation confirmed our speculation that *O. rufipogon* Griff. would not stand for annual species as considered by Senaratna (1956) and Sampath (1963).

It should be recalled that Watt (1891) considered *O. rufipogon* Griff. as a variety of *O. sativa* L. and offered the combination, *O. sativa* L. var. *rufipogon* (Griff.) Watt. However, this taxon shall be referred to as *O. sativa* L. var. *rufipogon* Watt for reasons that shall be soon obvious.

The type specimen of *O. sativa* var. *rufipogon* Watt (J. F. Duthie 6744) is available at the Forest Research Institute, Dehra Dun and is true to the description of Watt (1891). There is no doubt that this specimen is a natural hybrid between *O. sativa* and a *nivara* type backcrossed to the former parent such that it is hard to distinguish it from *O. sativa* except for the shedding nature of the spikelets. The type locality of *O. sativa* var. *rufipogon* Watt (Aligarh District, Uttar Pradesh, India) was surveyed by us and plants similar to *O. sativa* var. *rufipogon* Watt have actually been collected from this region. Natural hybrids between *O. sativa* and *nivara* types are a common occurrence in this region and out of several intergrades, some are fertile and closely resemble *O. sativa* except for the shattering spikelets. The type specimen of *O. sativa* var. *rufipogon* Watt is such a form collected by J. F. Duthie and so named by Watt. The fact that *O. rufipogon* Griff. and *O. sativa* var. *rufipogon* Watt are different is also evident from the basic differences in the two taxa. Griffith's *O. rufipogon* was collected on the margins of lakes, whereas Watt's *O. sativa* var. *rufipogon* "would require much less water than do the other wild states of this species" (Watt 1891, p. 504). *O. rufipogon* has been illustrated by Griffith as having long and prominent awns. In a natural community, red long awns are the most striking features of *O. rufipogon* Griff. (rufi = red, pogon = awn). The type specimen of Watt's *O. sativa* var. *rufipogon* is true to his description and has only tipped awns, not uncommon in hybrids between a *nivara* type and *O. sativa* (Figs. 1-4).

On the other hand, Griffith's *O. rufipogon* is described by Watt as *O. sativa* var. *bengalensis*. This is evident from the morphological descriptions of these two taxa in so far as they are comparable. The habitats described for both of these taxa are very similar. Moreover, the type locality of *O. rufipogon* Griff. (i.e. Habiganj) is not far from the type localities of *O. sativa* L. var. *bengalensis* Watt (i.e. Dacca region). Watt had field experiences in

the Dacca region of East Pakistan and studied the exsiccatae at Saharanpur (now at Dehra Dun) herbarium. Many of the sheets are annotated by Watt and are even now kept as arranged by Watt. One would expect that the type specimen of *O. sativa* L. var. *bengalensis* Watt, if existing, should be available here. The present authors could not find any sheet labelled as or alluded to *O. sativa* var. *bengalensis* by Watt either at Dehra Dun or at Calcutta.

O. rufipogon Griff. received the status of a synonym of *O. sativa* L. in Hooker's (1897) *Flora of British India*. According to him, "we have seen no specimen of Griffith's *O. rufipogon* which he describes as a very different looking plant but his characters are not diagnostic and a memorandum by Munro (in Herb. Kew) states that he can find no real distinction for it."

The subsequent flora writers did not recognise any other species except *O. sativa* L. within the *sativa* complex of *Oryza*. Trimen (1900), Cooke (1908), Haines (1924), Gamble (1934), all considered the wild rices of this complex as mere variants of *O. sativa* L.; Prain (1903), in his *Bengal Plants*, recognised *O. sativa* L. var. *fatua* Prain as the only additional taxon besides *O. sativa* L. in *O. sativa* complex. However, this taxon was described by him to be annual and hence does not seem to be what was named by Griffith *O. rufipogon*.

Roschevicz (1931) included all the wild rices of *O. sativa* complex under a single taxon, *O. sativa* f. *spontanea* and cited *O. rufipogon* as a synonym. However, as he himself concedes "*O. sativa* f. *spontanea* itself indubitably represents a complex of several species." Chevalier (1932) made no mention of *O. rufipogon* Griff.

The credit for the present revival of the name *O. rufipogon* Griff. goes to Chatterjee (1947, 1948) who recognised three distinct species within the *O. sativa* complex. The perennial forms were identified by him as *O. perennis* Moench, a name which is originally meant for an American species. According to him, the correct name for the annual wild species would depend on the examination of the type sheets of *O. montana* Lour., *O. rufipogon* Griff. and *O. aristata* Blanco. Since then *O. montana* Lour. (Porters 1956) and *O. aristata* Blanco (Chatterjee, 1951) have been definitely known to be mere cultivators of *O. sativa* L. On the other hand, the correct identification of *O. rufipogon* Griff. remained an unsettled problem.

Senaratna (1956), in his *Grasses of Ceylon*, recognised three distinct species within this complex as has been done by Chatterjee (1947, 1948). It is not known what led him to definitely assign the name *O. rufipogon* Griff. to the annual species. The perennial species is identified by him as *O. perennis* Moench following Chatterjee (1947, 1948). Recently, Sampath (1963) has expressed an opinion similar to that Senaratna (1956) in this regard.

On the other hand, Bor (1960) recognised no other wild species other than *O. rufipogon* Griff. in this complex in Asia. However, of the three exsiccatae cited by him, two were examined by us and were found to be *balunga* types. Tateoka (1963) held a view very similar to that of Bor (1960) and recognised a single wild species of *O. sativa* complex in Asia which he identified as *O. rufipogon* Griff. The name, *O. perennis* Moench, sometimes used for the Asian forms of this complex has been rejected by him (see Art. 69 of International Code of Botanical Nomenclature, 1961).

While the present authors agree with Chatterjee (1948), Senaratna (1956) and Sampath (1963, 1964) in recognizing three valid species for *O. sativa* complex of Asia, they are unable to support the nomenclature of the latter authors for reasons discussed already. The nomenclature adopted by Bor (1960) and Tateoka (1963), on the other hand, is supported on the basis of investigations made here. It is, therefore, proposed that the perennial wild rice of *O. sativa* complex of Asia which has often been misidentified (c.f. Roschevicz 1937; Tateoka, 1963) as *O. perennis* Moench by Chatterjee (1948), Senaratna (1956), and Sampath (1964) should be called as *O. rufipogon* Griff. At any rate, the name *O. rufipogon* should not be applied to a taxon that excludes the type of *O. rufipogon* Griff. (see Arts. 48 and 53 of International Code of Botanical Nomenclature, 1961).

O. fatua Koen.

The name *O. fatua* Koen., has been used by some authors (Burkill, 1935; Porteres, 1956) to mean the wild types of *O. sativa* complex. This name was first mentioned by Trinius (1839) with no description and has been ignored by a vast majority of taxonomists (Griffith, 1851; Steudel, 1855; Watt, 1891; Hooker, 1897; Trimen, 1900; Cooke, 1908; Haines, 1924 and Gamble, 1934).

The credit for first valid publication of *O. fatua* Koen. goes to Ridley (1925) who described it as having spikelets 4.5 mm long and awns 5.1 mm long. It leaves no doubt that *O. fatua* Koen. ex Ridley is not a species of *O. sativa* complex. Chatterjee (1948) considered it synonymous with *O. minuta* Presl.

O. fatua Koen., meaning wild forms of *O. sativa* complex, was validly published by Chevalier (1932). He mentioned its distribution in India, Malay Peninsula, Indo China and Java and typified it by the collections of Poilane (nos. 808, 606, 2563) from Indo China. *O. fatua* Koen. as described by Chevalier (1932) has been accepted by Roschevicz (1937) and Porteres (1956). However, *O. fatua* Koen. ex A. Cheval (1932) would be a latter homonym of *O. fatua* Koen. ex Ridley (1925) and has to be rejected (Art. 64 of International Code of Botanical Nomenclature, 1961).

Burkill (1935) considered *O. fatua* Koen. as a plant "exactly like the annual *O. sativa* in every respect except that it shatters at maturity." It appears that Burkill has referred to what has been recognized by us as 'field spontaneas.'

Backer (1946) gave a detailed description of *O. fatua* Koen. From the description, the plant appears to be the perennial wild rice !

From the above discussion it is clear that *O. fatua* has been variously understood by different workers despite the publication and typification of Ridley (1925) and Chavalier (1932). *O. fatua* Koen. cannot, therefore, be invoked in the species rank for any of *Oryza* species.

O. sativa var. *fatua* has been used in recent years to mean the plants of *sativa* complex other than the perennial wild species and the annual cultivated species. The description of the taxon as provided by Prain is very brief, "Spikelets about 7.5 mm long, always long awned ; an annual grass of watery places." According to him, it is distributed in Orissa, Sundarbans, West Bengal and North Bengal. The type specimen of *O. sativa* L. var. *fatua* Prain does not exist at Kew (Hubbard, *pers. comm.*) nor does it exist in Indian herbaria. It is suspected that Prain's description refers to a plant of *niwara* type. Chatterjee (1948) who recognized an annual wild species in this complex called this species provisionally *O. sativa* L. var. *fatua* Prain.

***O. sativa* L. f. *spontanea* Roshev.**

This taxon has been validly described by Roshevitz (1931) and several specimens have been cited by him which would be syntypes. As is evident from his description, *O. sativa* f. *spontanea* would embrace all the wild types of *O. sativa* complex that occur in Asia and America. In recent years, this taxon has come to mean the wild forms other than the perennial ones of *O. sativa* complex (Oka and Chang, 1959; Morishima, Oka and Chang, 1961). Sampath and Rao (1951), Sampath and Govindaswami (1958) and Richharia (1960) used this epithet in varietal rank of *O. sativa* for natural hybrids between *O. sativa* and *O. balunga*. However, all the combinations of this epithet other than Roshevitz's (1931) are invalidly published and cannot be accepted.

It should be noted that according to Roshevitz (1931) himself *O. sativa* f. *spontanea* "represents a complex of several species." As is evident from the above discussion, that any further circumscription of this taxon of Roshevitz (1931) would be highly subjective.

The above considerations would, therefore, lead to an inevitable conclusion that:

- (i) *O. perennis* Moench should be dropped from usage as this name has been confusing (Art.

69 of International Code of Botanical Nomenclature).

- (ii) the correct name for the perennial wild species of *O. sativa* complex in Asia is *O. rufipogon* Griff. *sens. str.* and
- (iii) the annual wild species of this complex in Asia lacks a valid name in its rank.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. B. P. Pal, Director and Dr. M. S. Swaminathan, Head of the Division of Botany of Indian Agricultural Research Institute for their keen interest in the work. They are also grateful to Rev. Dr. Santapau, S.J., Director, Botanical Survey of India for valuable discussions at various stages of the investigation. Senior author was awarded a fellowship of the Ministry of Education during the study.

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EXPLANATION TO THE PLATE

1. *Oryza rufipogon* Griff. sens. str. Coll. by Rev. A. W. Tim, s. n. Oct. 1963 NEOTYPE.
2. *Oryza nivara* Sharma et Shastry nom. nov. Sharma 69. HOLOTYPE.
3. *Oryza sativa* var. *rufipogon* Watt; close up of the panicle showing awnless spikelets.
4. *Oryza rufipogon* Griff. NEOTYPE; close up of the panicle showing fully awned spikelets.

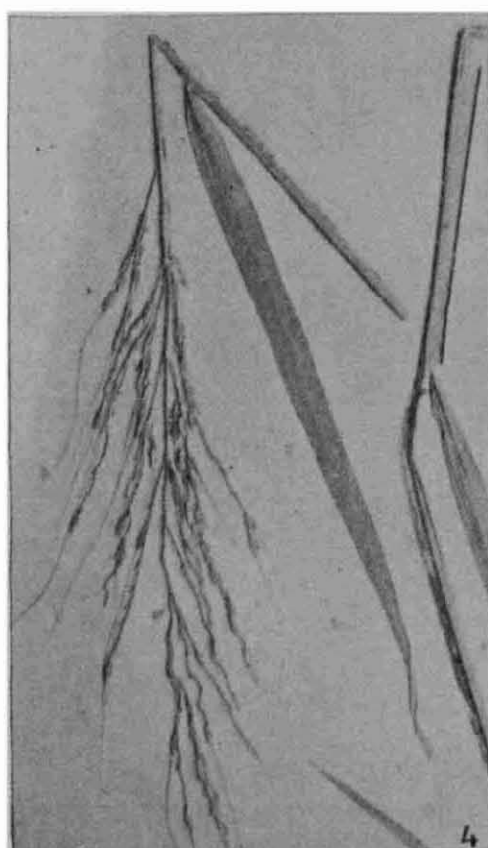
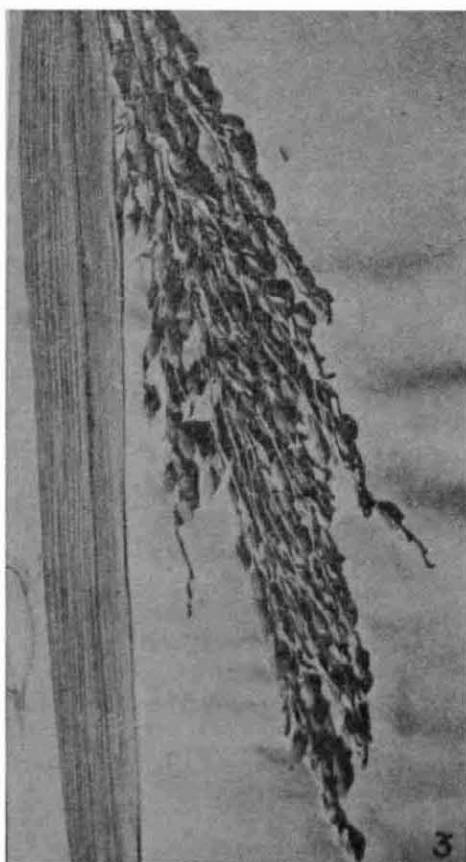
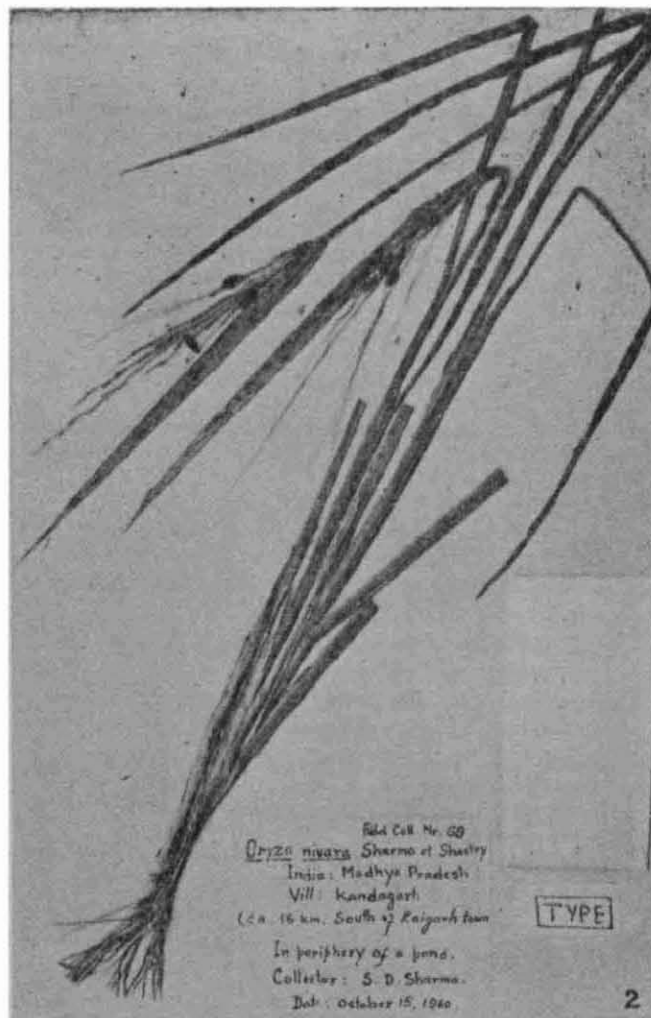
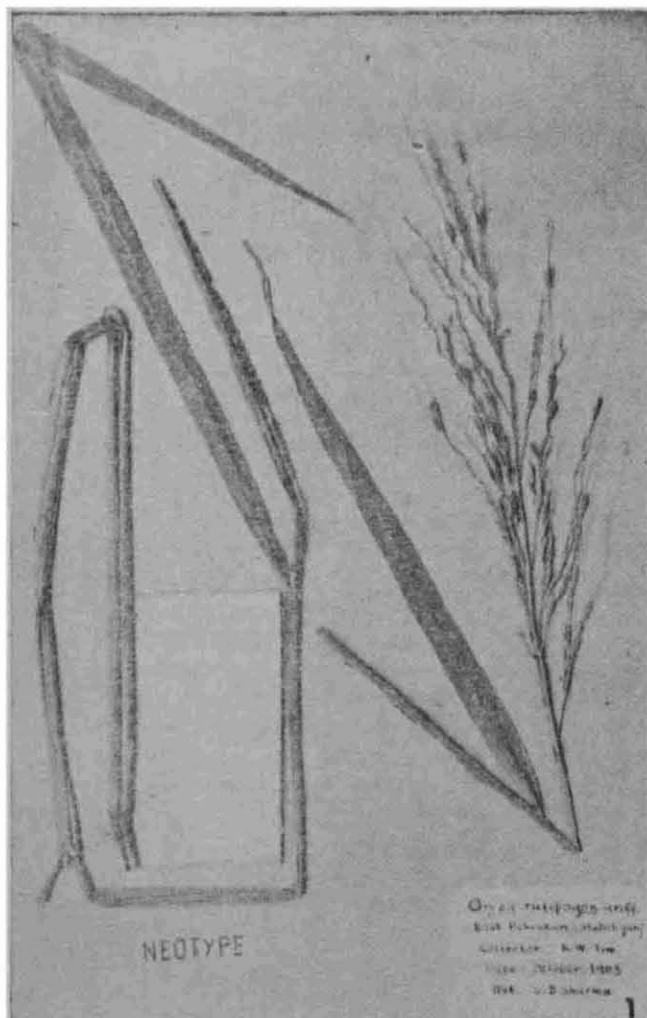


PLATE 1 : Figs. 1-4